MATH 122 Section 01
Homework 1

Below is a list of selected problems from Stewart's Calculus. You will have until the following Friday January 26 to finish the problem set. The first problems are suggested exercises and you do not need to turn them in. The latter set you should write up carefully and neatly as they will be graded. It is in your best interest to work all of the problems. All problems from the homework are fair game on the exams! You are encouraged to work in groups, but you must write up your own solutions. I will be available during office hours for help.

1 Suggested Problems

§6.1) 1, 3, 5, 7, 9, 11, 13, 15, 17, 21, 23, 29

§6.2) 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 33, 41, 47, 49, 61

2 Required Problems

1) Find the area of the region bounded by the parabola $y = x^2$, the tangent line to this parabola at $(1, 1)$, and the x-axis.

2) In your own words describe the equation

$$V = \lim_{n\to\infty} \sum_{i-1}^{n} A\left(x_i^*\right) \Delta x = \int_a^b A(x)dx$$

and include illustrations.

3) Compute the volume of the solid obtained by rotating the area bounded by the parabola $y = x^2$, the tangent line to this parabola at $(1, 1)$, and the x-axis around the x-axis.

4) Define a **right hyper-cylinder** to be the object in $\mathbb{R}^4$ (real euclidean four dimensional space) consisting of the set of all points (x, y, z, w) satisfying the equation $x^2 + y^2 + z^2 = r^2$. Compute the four dimensional analog of volume for a right hyper-cylinder with radius r and height h.